

SUKHOSHCH, V.I., A.M.; PETUKHOV, N.P.; MOSKOVSKIY, N.M.; TRIFONOV, V.F.

Technology and procedure of replacing the traction wheel unit of  
N60 electric locomotives. Elek. i tepl. tiaga 4 no. 9:41-43  
S '60. (MIRA 13:12)

1. Rabotniki naladcheskoy brigady Proyektno-konstruktorskogo  
byuro Glavnogo upravleniya lokomotivnogo khozyaystva  
Ministerstva putey soobshcheniya.  
(Electric locomotives--Maintenance and repair)

MIL'CHENKO, V.A.; NIKIFOROVA, T.S.; SUKHCSTAT, G.G.

Psychoses in bronchial asthma. Vop.psikh.i nevr. no.7:189-199 '61.  
(MIRA 15:8)

1. Iz psikhiatricheskoy bol'nitsy imeni P.P.Kashchenko (glavnyy  
vrach kand.med.nauk V.I.Bondarev, nauchnyy rukovoditel' prof.  
Ye.S.Averbukh).

(ASTHMA) (PSYCHOSES)

BESPIYATOV, M.P.; SUKHOTERIN, I.S.

Hydrolysis of neutral fat in settled lyes from a soap pan under pressure.  
Masloboyno Zhirovaya Prom. 18, No.4, 17-19 '53. (MLRA 6:4)  
(CA 47 no.16:8393 '53)

1. V.I.Lenin Polytech. Inst., Kharkov.

KUDRYASHOV, A.I., inzh.; SUKHOTERIN, I.S., inzh.; RABAYEV, V.I., inzh.

Producing alcohols from unsaponifiables II. Masl.-zhir.prom.  
24 no.11:26-29 '58. (MIRA 12:1)

1. Shebekinskiy kombinat sinteticheskikh zhirnykh kislot i  
zhirnykh spirtov.  
(Alcohols) (Unsaponifiable matter)

VELIZAR'YEVA, N.I.; RAPOPORT, I.B.; MAN'KOVSKAYA, N.K.; BARSIGYAN, I.B.;  
SHIMAN, A.M.; BABAYEV, V.I.; SUKHOTERIN, I.S.

Industrial experience in the oxidation of paraffins from sulfur-bearing crudes. Khim.i tekhn.topl.i masel 5 no.7:11-16 JI '60.

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke  
nefti i gazov i polucheniye iskusstvennogo zhidkogo topliva,  
NII SZhIMS i Shebekinskiy kombinat sinteticheskikh zhirnykh kislot  
i zhirnykh spirtov.

(Paraffins)

(Oxidation)

SUKHOTERIN, I.S., inzh.; LESHCHENKO, P.S., inzh.; KARNAUKH, A.M.; MIKHAYLENKO, G.I.

Industrial production of alkylol amides. Masl.-zhir.prom. 29 no.2:29-32  
F '63. (MIRA 16:4)

1. Shebekinskiy kombinat sinteticheskikh zhirnykh kislot i zhirnykh  
spirtov (for Sukhoterina, Leshchenko). 2. Ukrainskiy nauchno-issledovatel'  
skiy institut maslozhirovoy promyshlennosti (for Karnaukh, Mikhaylenko).  
(Amides)

M. Sukhotin (Leningrad Technical Inst.) Inst.  
Nekrasovskaya - Drug, Bingared, Mend., Inst. N. 2  
N. 2, Inst. Obshch. i. Noug Khim. No. 29.

model for an electrolyte, the limit of full solvation was found at a concn. of 3.63 to 2.14 mols/liter (Fig. 1). The distance between the centers of the ions in solution was calculated from the data of these solvations and from the models of the solates at LFS ( $r'$ ). For RbI these two values agreed completely,  $r' = r'' = 3.15$ , and the greatest discrepancy was found for NaI,  $r' = 7.70$ ,  $r'' = 7.16$ . Also calculated was the exothermic effect, when ions are brought from  $m = 0$  to LFS, three classes of salts could be distinguished with this way. For Li salts and KF the effect was +45, for Na salts +42, and for K and Rb salts +39 kcal./mole. A general equation is furnished:  $\Delta F_{LFS} = [A^* + E_{\text{elec}}^{\text{ion}} + E_{\text{elec}}^{\text{dipole}} + C^* + 14(E_{\text{elec}}^{\text{ion}} + E_{\text{elec}}^{\text{dipole}} + C^*) + (P_1 + P_2 + P_3) + (q_1 + q_2) + E_{\text{elec}}^{\text{dipole}}$ , where  $A^*$  = the effect of electrostatic action of the ions on the dipoles;  $E_{\text{elec}}^{\text{ion}}$  = effect of mutual polarization,  $E_{\text{elec}}^{\text{dipole}}$  = dispersion interaction,  $C^*$  = effect of mutual action of the models of water in the solvate film,  $P_1$  = the effect of interaction of a given ion with the dipoles of the solvated film of the nearest 6 attached ions of the opposite sign,  $P_2$  = the same for the next ions,  $P_3$  = same for the nearest 12 ions of identical sign,  $q_1$  = the mutual effect of the solvate films of a given ion with the nearest dipoles of the solvated films of the attached 6 ions of the opposite sign,  $q_2$  = same for the nearest 12 ions of the same sign,  $E_{\text{elec}}^{\text{dipole}}$  is the sum of the effects of the mutual repulsion between the ions and the water mols. The calculated values (according to this formula) for  $\Delta F_{LFS}$  for KCl are -120 and for KBr -123, which compares favorably with the experimentally detd. values of -119 and -115 kcal./mole, resp. Werner Jacobson.

Werner Jacobson—

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500

A simple microcalorimeter for studies in nonsqueezing solu-  
tions. K. E. Mikhchenko, M. Z. Pronina, and A. M. Suk-  
hotin. J. Appl. Chem. U.S.S.R. 27, 943-6 (1961; Engl.  
translation).—See C.A. 49, 6794. B. M. R.

PM  
AM

4.11

A simple microcalorimeter for studies in nonaqueous solutions. K. P. Mishchenko, M. Z. Pronina, and A. M. Sukhotin (Leningrad Technol. Inst., Leningrad). *Zhur. Fiz. Khim.* 27, 1003-6(1954).—The calorimeter consists of a small (20 ml.) test tube carrying the desired solvent and ampuls for the test substances which can be directly crushed into solution. The test tube is placed within a narrow-neck Dewar, filled with  $\text{CCl}_4$  and  $\text{H}_2\text{O}$ , and closed with a tight stopper carrying a measuring capillary, which can be used to detect temp. changes within the app. by the height of the aq. column in the capillary. The app. is immersed in the usual thermostatic bath for the expts. Accuracy of 0.5-1% is obtained. G. M. Kosolapoff

SUKHOTIN, A. M.

USSR/Chemistry - Physical chemistry

Card 1/1 : Pub. 22 - 27/44

Authors : Mishchenko, K. P., and Sukhotin, A. M.

Title : Integral heats of solution of certain alkali halide salts in anhydrous solvents at 25°.

Periodical : Dok. AN SSSR 98/1, 103-106, Sep 1, 1954

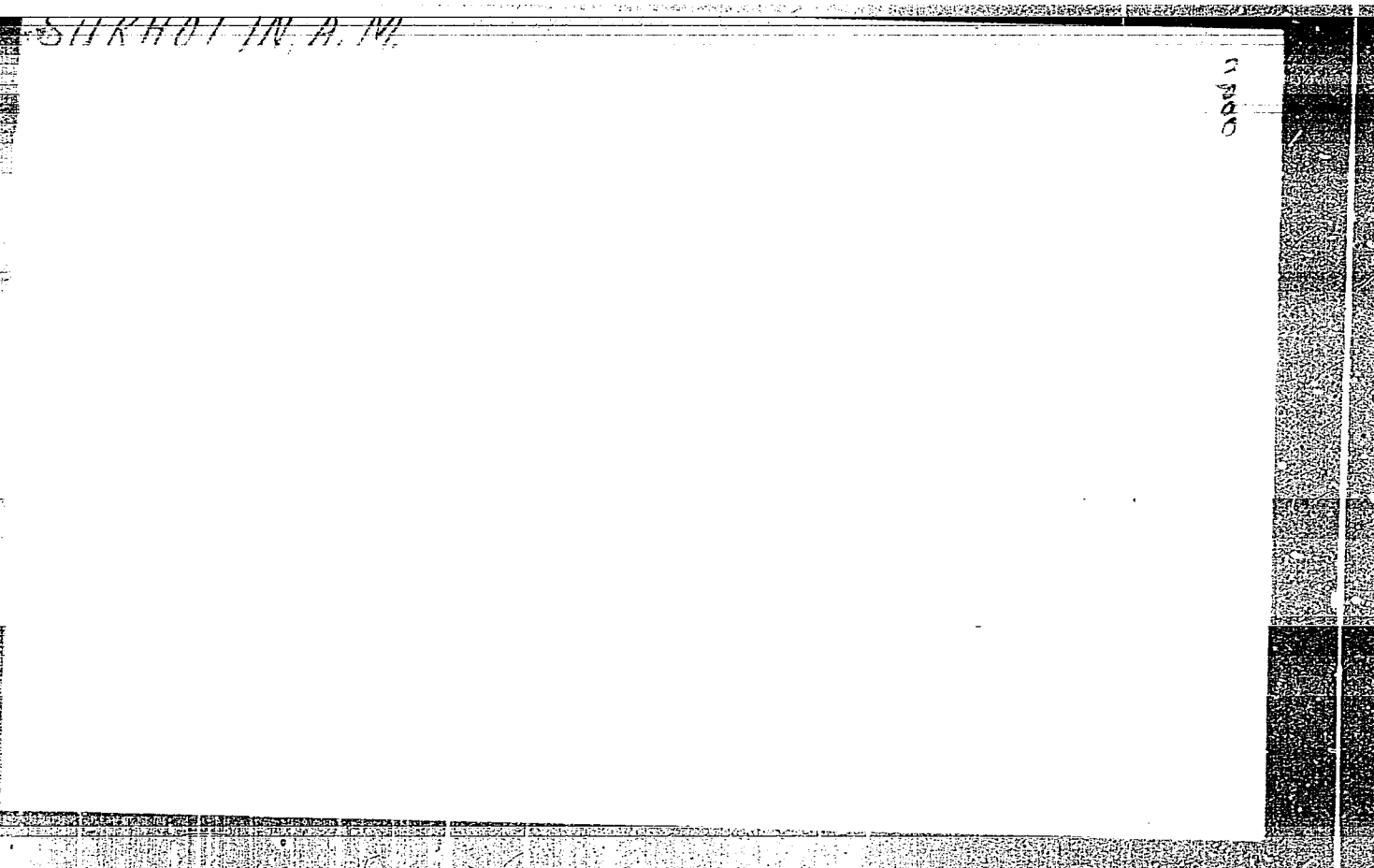
Abstract : The integral heat of solution of NaJ in acetone, methylethyl ketone, allyl alcohol, furfurole, pyridine, piperidine, acetonitrile and the heats of solution of NaCl, NaBr, NaJ and KJ in formamide, were investigated at 25° with the aid of a special micro-calorimeter. The results obtained are given in tables. The accuracy of the obtained integral heats of solution was established at ~ 1%. Eleven references: 2-USSR; 6-USA; 1-French and 1-German (1898-1954). Tables; graphs.

Institution : The Lencoviet Technological Institute, Leningrad

Presented by : Academician A. M. Trunkin, April 26, 1954

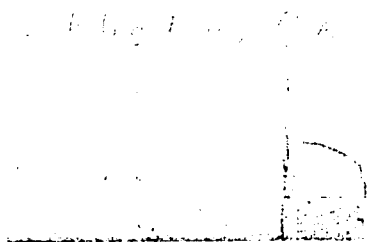
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4000

Max Chem

✓ The nature of passivating film on iron in acid solutions. 1  
 A. M. Sukhotin. *Uspekhi. Khim.* 25, 372-38 (1956).—Re-  
 view with 48 references through 1954. The present data  
 indicate that the film is 20-30 Å. thick, is poreless, and has  
 electronic char. The rate of destruction depends on its  
 reaction with acids. Anodic passivation of Fe in acid non-  
 oxidizing solns. forms at a potential of 0.15 v. a phase layer  
 of Fe oxide that reduces the free metal surface. Activation  
 of passive Fe in acid nonoxidant solns. is terminated by  
 autocatalytic decompn. of the film. No general theory  
 is valid at this time. G. M. K.

OK  
 PM 1957

GUKHOTOV, A. M. (Leningrad)

"New Directions for the Development of the Theory of Non-Aqueous Electrolyte Solutions,"

Report presented at Conference on the Effect of Solvents on the Properties of Electrolytes, Khar'kov, 14 - 16 Oct '57.

Zhurnal Fizicheskoy Khimii, 1958, Vol 32, Nr 4, pp; 960-962.

"APPROVED FOR RELEASE: 07/13/2001

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*See H. T. N. A. M.*

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SURKOTIN, A. M.

Distr: 4E2c/4E4j

<sup>27</sup> <sup>18</sup>  
 "Anodic activation of chromium in chrome steel. A. M. Surkotin and E. I. Antsenovskaya. Sov. Inst. Appl. Chem. (Engestr.), Zhur. Fiz. Khim., 31, 1521-30 (1957).—The compo. effects of chrome steels on their soln. kinetics at high anode potentials and the anode activation mechanism of Cr and its alloys were investigated in 2N HClO<sub>4</sub>, alone or with added (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> or NaCl in various concns. The polarization curves were taken with the usual form of potentiometer app. The proportion of Fe and Cr dissolved at high anode potentials differed from their proportion in 13 and 25% Cr steels. A much lower Cr concn. in a solid soln. as Fe was formed on the steel surface, the protective functions in such steels were transferred to Fe and the passivity depended on the Fe concn. in the alloy and on the presence of substances affecting its passivation. Only Fe<sup>3+</sup> ions entered the soln. from 13% Cr steel at neg. potentials, and the surface became enriched with Cr, resulting in a spontaneous steel passivation. The Cr oxidation in the anodic steel activation proceeded through the formation of Cr<sup>3+</sup> in the 1st step and a subsequent partial oxidation to Cr<sub>2</sub>O<sub>7</sub><sup>2-</sup>.  
 W. M. Sternberg

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*J. B. G.*

AUTHORS: Sukhotin, A. M., Kartashova, K. M. SOV/76-32-7-27/45

TITLE: On the Passivity of Iron in Acid Solutions. II. (O passivnosti zheleza v kislykh rastvorakh. II)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 7, pp 1632 - 1637 (USSR)

ABSTRACT: Flade (Ref 1) found that the activation of passive iron in acid solutions leads to changes of the potential, while Franck (Frank) and Weil (Veyl) (Refs 2,3) investigated this effect more in detail and explained the observed potential step by the electrochemical reduction of the substance of the passivation layer, which is finished at the moment when metallic iron is exposed. The latter, i.e., the corresponding potential value, was termed as activation potential and its function vs. the pH of the solution was expressed by an equation. As the given representation is in contrast to the mechanism of the activation process the authors carried out a number of experiments analogous to those by Franck (Ref 3), with the potential changes at various pH values being measured in acid solutions by means of a magneto-electric oscillograph. From the experimental data obtained may

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On the Passivity of Iron in Acid Solutions. II.

SOV/76-32-7-27/45

be seen that the step of the potential - time curve has a steep slope, and that in the case of a careful measuring and a higher velocity of the motion of the oscillograph loop a second step appears at the curve, which has hitherto not yet been noticed. The latter is considerably shorter than the first and shows an equal decrease of the potential value with the increase of the pH. Based on the observations made it is assumed that the first step corresponds to the reduction of the  $Fe^{3+}$  ions to  $Fe^{2+}$  at the electrode, while the second step represents the reduction process of the passivation layer, so that the beginning of the second step has to be termed the activation potential. The equation obtained contradicts that by Franck, which fact is explained by the inaccurate determination in the work carried out by Franck. In order to verify the assumptions made the authors made comparisons between the kinetic properties of the reduction reaction of  $Fe_3O_4$  and the above mentioned passivation layer, which proved the identity of these two processes assumed already in an earlier paper. There are 5 figures, 1 table, and 4 references, 1 of which is Soviet.

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On the Passivity of Iron in Acid Solutions. II

SOV/76-32-7-27/45

ASSOCIATION: Gosudarstvennyy institut prikladnoy khimii, Leningrad (Leningrad State Institute of Applied Chemistry)

SUBMITTED: March 12, 1957

1. Iron--Passivity    2. Acid solutions--Chemical effects    3. Hydrogen  
ion concentration--Chemical effects    4. Iron ions--Reduction

Card 3/3

AUTHORS: Antonovskaya, E. I., Sukhotin, A. M. SOV/76-32-8-18/37

TITLE: Peculiarities of the Anodic Activation of Chromium and Chromium Steels (Ob osobennostyakh anodnogo aktivirovaniya khroma i khromistykh staley) II. The Effect of the Acidity of the Solution (II. Vliyaniye kislotnosti rastvora)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 8, pp. 1842-1846 (USSR)

ABSTRACT: In a previous paper a difference in the ratio Cr/Fe between the products of the solution and the steels ~~Kh13~~ and ~~Kh25~~ was found already in the case of a dissolution within the range of high potentials. The authors give a correction of the standard potential for the anodic process of the activation of chromium in acid solutions, obtained according to data by Latimer (Ref 2). The anodic polarization curves for chromium and the steels ~~Kh13~~ and ~~Kh25~~ were taken in 2, 0,5 and 0,1 N HClO<sub>4</sub> solutions, as well as in buffer solutions of 2N HClO<sub>4</sub> with potassium biphthalate. It was found that the activation potential of pure chromium decreases linearly as the pH increases. This fact is represented

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Peculiarities of the Anodic Activation of Chromium and Chromium Steels. II.  
The Effect of the Acidity of the Solution

SOV/76-32-8-18/37

by the equation  $\varphi_a = 1,33 - 0,0784 \text{ pH}$  and it agrees with the data by Heuman and Rosener (Khoyman and Rozener) (Ref 4). From the observations made may be seen that in the formation of the  $\text{Cr}_2\text{O}_7^{2-}$  ion three oxygen atoms enter from the surface and four from the water molecule. No dependence on the pH was found in steels, contrary to pure chromium. It is assumed that in this case the reaction takes place without the hydrogen ions taking part in it, with the ratio Cr/Fe playing an important role. The latter is regarded as the explanation of the different behaviour of the two types of steel as the steel Kh25 exhibits a great dependence of the anodic dissolution on the acidity. There are 6 figures and 5 references, 2 of which are Soviet.

ASSOCIATION: Gosudarstvennyy institut prikladnoy khimii (State Institute of Applied Chemistry)

SUBMITTED: March 21, 1957

Card 2/2

AUTHORS: Sukhotin, A. M., Kartashova, K. M. SOV/76-32-9-18/4

TITLE: On the Passivity of Iron in Hot Concentrated Alkaline Solutions (O passivnosti zheleza v goryachikh kontsentririvannykh rastvorakh shchelochi)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 9, pp 2068 - 2072 (USSR)

ABSTRACT: The authors investigated the electro-chemical oxidation and reduction of magnetite in 10 n. sodium hydroxide at 80° C. A mercury half-cell was used as a comparison electrode. Polarization curves were plotted (Figs 1,2,4, and 5). The investigation led to the following conclusions in regard to the passivity of iron: The passive layer in 10 n. NaOH at 80° C is magnetite. This effect can become very strong, but only the outermost thin layer which is directly adjacent to the iron becomes passive. The characteristic passivity and activity of iron in 10 n. NaOH is conditioned by the electro-chemical properties of the magnetite. There are 5 figures and 5 references, 5 of which are Soviet.

Card 1/2

SUPHOTIN, A.M., Doc Chem Sci -- (diss) "Problems in the theory of solutions of electrolytes in solvents with low and average <sup>medium</sup> dielectric porosity." Len, Sci Tech Information of State Inst of Applied Chemistry, 1959, 26 pp with graphs (State Committee of the Council of Ministers USSR for Chemistry. State Order of Labor Red Banner Inst of Applied Chemistry) 20 copies. Bibliography at end of text (15 titles) (ML, 36-59, 112)

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PHASE I BOOK EXPIRATION SOV/2216

5(4)

Soveshchaniye po elektrokimii. 4th. Moscow, 1956.

Trudy... (sbornik) (Transactions of the Fourth Conference on Electrochemistry. Collection of Articles) Moscow: Izd-vo AN SSSR, 1959. 868 p. Errata slip inserted. 2500 copies printed. Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk.

Editorial Board: A.M. Prumkin (Resp. Ed.), Academician, O.A. Yesin, Professor, S.I. Zhdanov (Resp. Secretary), B.N. Kabanov, Professor, Ya. M. Kolotyrkin, Docent, Institute of Chemical Sciences, V.V. Losev, P.D. Lukovtsev, Professor, Z.A. Solov'yeva, V.V. Stender, Professor, and O.M. Florianskiy, Ed. of Publishing House: N.G. Iegorov, Tech. Ed.: T.A. Prusakova.

PURPOSE: This book is intended for chemical and electrical engineers, metallurgists, metallurgists and researchers interested in electrochemistry.

SCOPE: The book contains 127 of the 138 reports presented at the Fourth Conference on Electrochemistry sponsored by the Department of Chemical Sciences and the Institute of Physical Chemistry, Academy of Sciences, USSR. The collection pertains to different branches of electrochemical kinetics, double layer theory, electrochemical processes in metal electrodeposition and industrial electrolysis. Abridged discussions are given at the end of each division. The majority of reports not included in the book have been published in periodical literature. Specialties are mentioned. References are given at the end of most of the articles.

Bushkova, R. Ed. (Institute of Electrochemistry, Academy of Sciences, USSR). Investigating the Passivation of Metals by the Oxygen Method of Measuring the Contact Potential Difference and Electrochemical Methods 603

Mirolyubov, Ya. M., M.D. Tomashov, and M.P. Zhuk. Institute of Physical Chemistry, Academy of Sciences, USSR. Passivity of Iron in Oxidizing Solutions 609

Kozvishenskiy, D.S. (Kazanskiy filial AN SSR-Kazan' Branch, Academy of Sciences, USSR). Some Regularities of the Anodic Dissolution of Metals Under Conditions of Local Passivation 617

Subbotin, A.M. (Gosudarstvennyy institut prikladnoy khimii, Institute of Applied Chemistry). Passivity of Iron in Acid Solutions 621

Rorokov, I.V. Anodic Passivation of Copper and Some of Its

Card 28/34

5(4)

AUTHORS:

Missan, A. Ye., Sukhotin, A. M.

SOV/78-4-3-20/34

TITLE:

Investigation of Several Systems on the Basis of Perchloric Acid by Electrochemical Methods (Issledovaniye nekotorykh sistem na osnove khlornoy kisloty elektrokhimicheskim metodom)

PERIODICAL:

Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 3, pp 606-622 (USSR)

ABSTRACT:

Electrolytic methods were used for the investigation of concentrated perchloric acid, its decomposition products and solutions of chlorine oxides in perchloric acid. The production of the pure initial components was described in detail: perchloric acid 100 %;  $\text{HClO}_4$  97-98 % (by dilution of 100 %  $\text{HClO}_4$  with 74-75 % perchloric acid) and 74-75 % perchloric acid. Chlorine trioxide  $\text{Cl}_2\text{O}_6$  was produced by the action of elementary chlorine upon  $\text{KClO}_3$  at  $50^\circ$  according to the method devised by Bode and Klesper, and chlorine dioxide  $\text{ClO}_2$  from  $\text{KClO}_3$  and oxalic acid according to the following reaction:

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Investigation of Several Systems on the Basis  
of Perchloric Acid by Electrochemical Methods

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After the introduction of  $\text{ClO}_2$  into 97.9 %  $\text{HClO}_4$  solution the cathode polarization curves with the platinum cathode were investigated. It was found that in solutions of chlorine dioxide in  $\text{HClO}_4$  no disproportionation and no reaction with  $\text{HClO}_4$  takes place. The reduction of  $\text{ClO}_2$  starts at the potential 1.75-1.8 v. From the polarization curves of  $\text{HClO}$  and  $\text{HClO}_3$  in concentrated perchloric acid it may be seen that in these solutions  $\text{Cl}_2\text{O}$ ,  $\text{ClO}_2$ , and  $\text{Cl}_2\text{O}_6$  are formed, which are reduced on the platinum electrode. No interaction reaction between  $\text{ClO}_2$  and  $\text{Cl}_2\text{O}_6$  takes place with  $\text{HClO}_4$ . The reduction of  $\text{Cl}_2\text{O}_6$  occurs at  $\varphi = 2$  v and proceeds according to the equation  $\text{ClO}_3 + e \rightarrow \text{ClO}_3^-$ . The free energy for the formation of  $\text{ClO}_3$  was computed in the following way:  $\Delta F^0 = +46$  kcal.

By plotting the cathode polarization curve with the platinum electrode the decomposition of  $\text{HClO}_4$  was investigated. It

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Investigation of Several Systems on the Basis  
of Perchloric Acid by Electrochemical Methods

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In 74 %  $\text{HClO}_4$   $\text{HClO}$  decomposes according to the following  
equation:  $\text{Cl}_2\text{O} + 2\text{H}^+ + 2\text{e} \longrightarrow \text{Cl}_2 + \text{H}_2\text{O}$ ,  $\varphi_0 = 1.71 \text{ v}$  (4)  
and according to the reaction (18):

$4\text{HClO} \longrightarrow 2\text{Cl}_2 + \text{O}_2 + 2\text{H}_2\text{O}$ . Oxygen forms in the case of the  
cathode polarization with a platinum electrode in 20 %  $\text{HClO}_4$   
solution. In 20 %  $\text{HClO}_4$  solution  $\text{Cl}_2\text{O}$  and  $\text{HClO}$  are reduced.  
The molecules of  $\text{HClO}_3$  are completely dissociated in 20 %  
 $\text{HClO}_4$  solution and are not reduced by the platinum cathode.  
The results can be used for analytical determinations of  
chlorine and chlorine compounds in acid solutions and in  
concentrated perchloric acid. There are 22 figures, 2 tables,  
and 14 references, 5 of which are Soviet.

SUBMITTED: December 24, 1957  
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SOV/78-4-6-10/44

AUTHOR: Sukhotin, A. M.

TITLE: On the Nature of the Electrochemical Oxidation Process in Nitric Acid Solution Containing Nitrogen Oxides (O prirode protsessov elektrokhimicheskogo okisleniya v rastvorakh azotnoy kisloty, sodержashchikh kisly azota)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 6, pp 1277-1280 (USSR)

ABSTRACT: The oxidation potential of the low nitrogen oxides were investigated on a platinum anode in different nitric acid concentrations. It was found that the electrode potential depends on the quantity of the electric current (by the curves " $\varphi - q$ "). The cell and the apparatus used for the investigation of the curves  $\varphi - q$  are given in figure 1. The potentials of the anode oxidation of some nitrogen oxides in nitric acid solutions are given in table 1. The curve  $\varphi - q$  on the anode polarization of the platinum electrode in 20 n  $\text{HNO}_3$  (1) and in the same acid with an addition of  $\text{NaNO}_3$  (2) was plotted and is given in figure 2. The curve  $\varphi - q$  of the  $\text{N}_2\text{O}_4$ -solution

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On the Nature of the Electrochemical Oxidation Process in Nitric Acid  
Solution Containing Nitrogen Oxides

in 17.4 n  $\text{HNO}_3$  was also plotted and is given in figure 3. The results show that only NO is oxidized more slowly than 5.5 normal in the case of nitric acid concentration at the anode. The oxidation of the tri- and tetravalent nitrogen proceeds only after the transformation of the oxides into NO. In 20 n  $\text{HNO}_3$  all low oxides are transformed into  $\text{NO}_2$  which oxidizes then on the anode. In the case of concentrations of 17.4 n and 20 n  $\text{HNO}_3$  NO oxidizes first on the anode, then  $\text{NO}_2$ . There are 3 figures, 1 table, and 7 references, 1 of which is Soviet.

ASSOCIATION: Gosudarstvennyy institut prikladnoy khimii  
(State Institute of Applied Chemistry)

SUBMITTED: March 18, 1958

Card 2/2

5(4)

AUTHORS:

Sukhotin, A. M., Timofeyeva, Z. N.  
(Leningrad)

SOV/76-33-7-22/40

TITLE:

On the Association of Ions in Solutions. II. Causes of  
"Anomalous" Electrical Conductivity

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 7, pp 1602-1609  
(USSR)

ABSTRACT:

The theory of the formation of ionic triplets (IT) (Ref's 3, 4), by which anomalous phenomena of electrical conductivity in anhydrous solutions can be explained, has recently found wide application. It is assumed that within the concentration range corresponding to the minimum of electrical conductivity (IT) are formed in addition to ion pairs. The portion of the latter increases with the concentration, which results in rising electrical conductivity (EC) since (IT) are electrically conductive. A. M. Sukhotin (Ref 12) assumed that the appearance of a minimum of the isothermal lines of (EC) in solutions with small dielectric constants (DC) can be explained by general ionic properties of the solution without the term of (IT). According to the last-mentioned ideas (Ref 12), the dependence of the (EC) on the concentration of the solutions of sodium iodide in ethanol-tetrahydrocarbon and water - dioxane mixtures was investigated

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On the Association of Ions in Solutions .

SOV/76-33-7-22/40

II. Causes of "Anomalous" Electrical Conductivity

here at  $25 \pm 1^\circ\text{C}$ . The (DC) in the first-mentioned mixture amounted to 2.32 - 24.25, while it was 6.8 and 9.53 in the last-mentioned mixture. The authors determined the density, viscosity, and (DC) of ethanol -  $\text{CCl}_4$  mixtures, which were then compared with data of other authors (Table 1). The (EC) of readily conducting NaJ-solutions was investigated with the help of an ordinary bridge connection on a ZG-10 sound generator and a telephone amplifier, whereas a device with an EO-1 electrometer tube was applied to solutions of higher electric resistance. The results of measurements of the (EC) of NaJ-solutions (Table 2) are approximately similar to those obtained from solutions of tetraisoamyl ammonium nitrate in dioxane - water mixtures (Ref 10), which confirms that the minimum on the (EC) isothermal lines is a general phenomenon at small dielectric constants of the solution. The authors then calculated the values of the equivalent (EC) at infinite dilution  $\lambda_0$  (Table 3), as well as the value  $(\lambda/\lambda_0) = c$  for two compositions of the solution of NaJ in ethanol -  $\text{CCl}_4$  mixtures (Table 4) according to

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On the Association of Ions in Solutions.

SOV/76-33-7-22/40

II. Causes of "Anomalous" Electrical Conductivity

equation (4). The dissociation constant  $K$  was obtained from the latter. The mean ionic activation coefficients (IA) for NaJ were calculated by equation (3) from the values of  $K$  and  $\alpha$  (Table 5). The resultant values permit an explanation of the "anomalous" (EC) phenomena by a variation of the (IA) with the concentration, without using the term of (IT). There are 4 figures, 5 tables, and 18 references, 6 of which are Soviet.

SUBMITTED: January 9, 1958

Carl 3/2

5 (4)

AUTHORS:

Sukhotin, A. M.; Timofeyeva, Z. N.,  
(Leningrad)

SOV/76-33-8-10/39

TITLE:

On the Association of Ions in Solutions. III. Potentiometric  
Determination of the Activity Coefficients of Ions in Solutions  
With a Low Dielectric Constant

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 8, pp 1739 - 1743  
(USSR)

ABSTRACT:

In a previous paper (Ref 2) it was shown that certain solvent  
mixtures can be produced in which alkali halogen salts dissolve  
easily, whereby a medium with a low dielectric constant (DC) is  
obtained. The properties of these solutions can be investigated  
potentiometrically, which cannot be done in the case of systems  
with substituted ammonium salts. In the present case, the elec-  
tromotive force (EMF) of a cell without transmission was invest-  
igated  $\text{Na(Hg)}|\text{NaJ}|\text{dissolved AgJ} \sim \text{Ag}$ . The cell contained NaJ-so-  
lutions of the following composition: 9.6% by weight of  
 $\text{C}_2\text{H}_5\text{OH} + 90.4\%$  by weight of  $\text{CCl}_4$  ((DC) = 3.4, viscosity 0.89  
centipoise, density  $1.4419 \text{ g/cm}^3$ ). Measurements were made at  
25°C with a potentiometer with series-connected tube amplifier

Card 1/3

On the Association of Ions in Solutions.

SOV/76-33-8-10/39

III. Potentiometric Determination of the Activity

Coefficients of Ions in Solutions With a Low Dielectric Constant

LU-2 (sensitivity  $10^{-11}$  a). The experiments were carried out by the methods (Ref 2). The values of the (EMF)  $E$  are given in a table (Table 1). Starting from the equation

$$E = E^0 - 2 \frac{2.3 RT}{F} \log \alpha \cdot f_{\pm} \quad (1)$$
 ( $E^0$  = difference in the standard potentials of electrodes,  $\alpha$  = degree of dissociation,  $f_{\pm}$  = mean

ion activity coefficient) a method for the determination of the value  $E^0$  is suggested, so that the values of  $f_{\pm}$  of the NaJ in

the above solutions can be calculated from (1) and the data for  $\alpha$  obtained from (Ref 2) (Table 2), i.e. for not completely dissociated electrolytes. Similarly,  $E^0$  and  $f_{\pm}$  of the paper (Ref 1)

(HCl in water-dioxane solutions with 18% water) could be determined, and more precise values of the dissociation degree found (Table 3). A theoretical analysis of the dependence of the activity coefficients on the concentration will be discussed in

Card 2/3

On the Association of Ions in Solutions.

SOV/76-33-8-10/39

III. Potentiometric Determination of the Activity

Coefficients of Ions in Solutions With a Low Dielectric Constant

a later paper. There are 2 figures, 3 tables, and 8 references,  
5 of which are Soviet.

SUBMITTED: January 9, 1958

Card 3/3

05807

SOV/76-33-10-5/45

A Dynamic Method Used for Measuring the Interelectrode Capacity and for Determining Zero-charge Potentials

librium was brought about). The authors developed two varieties of this dynamic method which are suited for measuring the capacity difference and the polarization resistance of the electrodes. The first variation is applicable to electrodes in comparatively strongly concentrated solutions; it is based on the calculation of capacity  $C_x$  and polarization resistance

$R_x$  of the electrode from a vector diagram (Fig 4). The latter is plotted from results of measurement obtained by means of a device demonstrated in figure 3 (with a 3G-10 generator and an MPO-2 oscilloscope). The second variety is suited for comparatively weak solutions. Further, it provides for an alteration of the measuring circuit and is based on the same principle as N. P. Gnusin's method (Ref 2). The circuit diagrams of both varieties are illustrated in figures 1 and 5. The first variety was used for investigating a passive iron electrode in  $H_2SO_4$ . Experimental results will be published in the next communication. The applicability of the second variety to a determination of zero-charge potentials is exemplified by a dropping mercury electrode in  $3 \cdot 10^{-3}$  n KCl solution (Fig 7:

Card 2/3

05807

SOV/76-33-10-5/45

A Dynamic Method Used for Measuring the Interelectrode Capacity and for  
Determining Zero-charge Potentials

electrode cell), as well as by 1Kh25 chrome steel in  $10^{-3}$  n  $\text{HClO}_4$   
(Fig 9: electrode cell) (1Kh25 is a solid chromium solution  
in  $\alpha$ -iron; its Cr content amounts to 25%). There are 9 figures  
and 3 Soviet references.

ASSOCIATION: Gosudarstvennyy institut prikladnoy khimii, Leningrad  
(State Institute of Applied Chemistry, Leningrad)

SUBMITTED: March 3, 1958

Card 3/3

5.4/30

66850

SOV/76-33-11-3/47

~~5(4)~~

AUTHORS: Shcherba, L. D., Sukhotin, A. M.

TITLE: Study of the Hydration of Ions by Means of Infrared Absorption Spectra <sup>1</sup>

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 11, pp 2401-2404 (USSR)

ABSTRACT: Investigations (Refs 1,2,5,7) of an absorption band shift at  $4.7\mu$  by dissolution of salts in water show that the shift increases with rising salt concentration. Ions with a small radius have an effect on the absorption band similar to a temperature drop and ions with a larger radius act on it like a temperature rise, which is in agreement with Bernal's and Fauler's findings (Ref 10). Waldron (Ref 8) studied the effect of dissolved salts on the infrared spectrum of HDO. In the present case the influence exercised by  $\text{LiClO}_4$ ,  $\text{LiJ}$ ,  $\text{NaJ}$ ,  $\text{Mg}(\text{ClO}_4)_2$ ,  $\text{MgJ}_2$ ,  $(\text{iso-C}_5\text{H}_4)_4\text{NJ}$ , and butyl quinoline iodide in a small quantity of water dissolved in acetonitrile ( $\text{H}_2\text{O}$  and  $\text{D}_2\text{O}$ ) on the infrared spectrum was investigated. The authors

Card 1/2

4

5.4600

5(4)

AUTHOR:

Sukhotin, A. M.

TITLE:

On the Association of Ions in Solutions

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 11, pp 2405-2409  
(USSR)

ABSTRACT:

The author, in collaboration with Z. N. Timofeyeva, studied the dependence of electrical conductivity on the salt concentration and the composition of the solvent mixture of NaJ solutions in ethanol carbon tetrachloride mixtures (dielectric constant: 24-2.32) (Fig 1). Similar investigations were carried out in collaboration with Ye. M. Ryzhkov (Figs 2-6) concerning NaJ, LiJ, LiBr, LiCl, and (iso-C<sub>5</sub>H<sub>11</sub>)<sub>4</sub>NJ in butanol - hexane mixtures (dielectric constant: 17.3-2.02). The viscosity, density, and dielectric constant of the solutions in a butanol - hexane mixture were also determined. In the range of low concentrations the equilibrium between ions and ion pairs is in all cases well defined by Ostwald's law of dilution. If the dielectric constant of the solvent is sufficiently small, a minimum can be observed on the conductivity isothermal lines which can be ascribed to the decrease of the activity coefficient of the ions. Fuoss's

Card 1/2



66851

SOV/76-33-11-4/47

On the Association of Ions in Solutions

and Kraus' explanation of the theory of triple-charged ions is not confirmed by the data obtained on the ion transport numbers. A steep increase of many isothermal lines after the minimum is explained by the increasing dielectric constant with increasing salt concentration. The occurrence of a maximum of electrical conductivity at high concentrations is explained by an increase in the viscosity of the solution. The calculation results obtained by G. I. Mikulin's theory (Ref 3) in general agree with the values of the mean activity coefficients of the ions, which were obtained from conductometric data. There are 8 figures and 4 references, 1 of which is Soviet.

Card 2/2

SUKHOTIN, A.M.

Ionic association in solutions. Part 4: Transference numbers  
and the problem of ion triplets. Zhur.fiz.khim. 34 no.1:63-67  
Ja '60. (MIRA 13:5)

1. Gosudarstvennyy institut prikladnoy khimii, Leningrad.  
(Ions--Migration and velocity)

S/076/60/034/04/10/042  
B010/B009

AUTHORS: Sukhotin, A. M., Ryzhkov, Ye. M. (Leningrad)

TITLE: On the Characteristics of the Isotherms of Electrical Conductivity of 1-1-valency Salts in Solutions With Low Dielectric Constants.

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 4, pp. 762-767

TEXT: A systematic study of the effect of the dielectric constant upon the properties of solutions of simple mineral salts was carried out. In the present paper data concerning the conductivity, viscosities, and dielectric constants of the solutions of NaI, LiCl, LiBr, LiI and (iso-C<sub>5</sub>H<sub>11</sub>)<sub>4</sub>NI in mixtures of hexane and butanol are given. The dielectric constants were determined with the aid of an IE-2 capacitance meter. The resistivity of solutions with electrical conductivities between  $10^{-6}$  and  $10^{-11} \Omega^{-1} \text{ cm}^{-1}$  was measured by means of a direct-current instrument with the aid of a reflecting galvanometer of type M-21. The solutions with electrical conductivities in the interval  $3 \cdot 10^{-14} < \kappa < 10^{-11} \Omega^{-1} \text{ cm}^{-1}$  were investigated by means of a ballistic galvanometer of type GZB-47 and a

Card 1/2

RYZHKOV, Ye.M.; SUKHOTIN, A.M. (Leningrad)

Electrochemical study of solutions of HCL in solvents of low  
dielectric constants. Zhur.fiz.khim. 34 no.5:983-989 My '60.  
(MIRA 13:7)

1. Gosudatstvennyy institut prikladnoy khimii.  
(Hydrochloric acid)  
(Electrolytes—Conductivity)  
(Dielectric constants)

S/076/00/034/007/011/042/XX  
2004 5068

AUTHORS: Ryzhkov, Ye. M. and Sukhotin, A. M.

TITLE: Electrochemical Study of HCl Solutions in Solvents With Low Dielectric Constants. II

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 7, pp. 1402-1406

TEXT: In Ref. 1, the authors studied the electrical conductivity of HCl solutions in butanol and butanol-hexane mixtures, and calculated the dissociation constant  $K_d$  of HCl in the mixtures. For solutions in pure butanol, it is impossible to perform this calculation. Therefore,  $K_d$  is determined in this paper by measuring the e.m.f. of the cell  $Pt(H_2) | HCl + butanol | AgCl - Ag$  at 25°C. A compensation method was used in the measurements. A ППТБ-1 (PPTV-1) potentiometer equipped with an ЛУ-2 (LU-2) tube amplifier was used, the pointer galvanometer of which had been replaced by an М-21 (M-21) mirror galvanometer. Results are given in a table and a figure. A correction for atmospheric pressure and vapor pressure of HCl in butanol was introduced.

Card 1/5

Electrochemical Study of HCl Solutions in  
Solvents With Low Dielectric Constants. II

S/076,00/034/007/011/042/XX  
B004/B068

V. V. Aleksandrov (-0.132 v) is due to the fact that these researchers worked with excessively concentrated solutions. For systems with low dielectric constants, only dilute solutions are admissible. The second linear section with a slope equal to -0.059 corresponds to  $f_{\text{HCl}} = 1$  and a constant dissociation degree calculated according to T. Shedlovsky (Ref. 15) from the conductivity of HCl in butanol. It was found from equation (3) that  $E^0 = -0.085$  v and from equation (4) that  $K_d = 5 \cdot 10^{-3}$ .  $f_+$  was calculated from equations (1) and (2). The graphical representation of  $\log f_+ = F(\sqrt{ac})$  in Fig. 3 shows that the values found deviate both from the first and the second approximation of the Debye - Hückel theory. This is explained by the low dielectric constant. The deviation of the function  $E = f(\log c)$  from linearity for concentrations above 0.5 M is due to changes of  $f_{\text{HCl}}$ . For 4.15 M,  $f_{\text{HCl}}$  was estimated to be equal to 6. There are 3 figures, 2 tables, and 15 references: 4 Soviet, 6 US, 3 British, 1 Finnish, and 1 Japanese.

Card 3/3/

Electrochemical Study of HCl Solutions in  
Solvents With Low Dielectric Constants. II

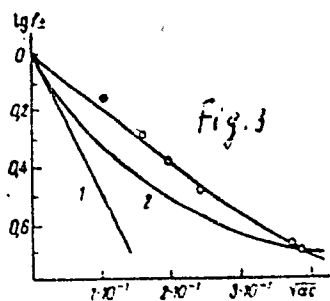
S/076/60/034/007/011/042/XI  
3004/3068

ASSOCIATION: Gosudarstvennyy institut prikladnoy khimii, Leningrad  
(State Institute of Applied Chemistry, Leningrad)

SUBMITTED: June 14, 1958

Text to Fig. 2: Electromotive Force of the Chain  $Pt(H_2) | HCl \text{ in Butanol} |$   
 $AgCl - Ag$  at  $25^\circ C$ .

Text to Fig. 3: 1: First Approximation; 2: Second Approximation of the  
Debye - Hückel Theory



Card 4/4

SUKHOTIN, A.M.; RYZHKOV, Ye.M. (Leningrad)

Ionic association in solutions. Part 6: Solutions of  $\text{CaCl}_2$  in  
butanol - hexane mixtures. Zhur. fiz. khim. 34 no. 12:2748-2751  
D '60. (MIRA 14:1)

1. Gosudarstvennyy institut prikladnoy khimii. (Hexane)  
(Calcium chloride) (Butanol)



SUKHOTINA, G.G. (Leningrad); SUKHOTIN, A.M. (Leningrad)

Ionic association in solutions. Part 7: Characteristics of ionic motion in solutions of associated electrolytes. Zhur. fiz. khim. 35 no.1:41-47 Ja '61. (MIRA 14:2)

1. Gosudarstvennyy institut prikladnoy khimii. (Ions—Migration and velocity) (Electrolytes)

SUKHOTIN, A.M. (Leningrad); SABUROVA, D.N. (Leningrad); SMIRNOVA, G.V.  
(Leningrad)

Association of ions in solutions. Part 5: Migration ratio of LiCl  
and LiI in mixed solvents. Zhur. fiz. khim. 35 no. 4:711-712 Ap  
'61. (MIRA 14:5)

1. Leningradskiy institut prikladnoy khimii.  
(Ions—Migration and velocity)

RYZHKOV, Ye.M.; SUKHOTIN, A.M. (Leningrad)

Ionic association in solution. Part 10. Zhur.fiz.khim. 36  
no.10:2205-2208 0 '62. (MIRA 17:4)

1. Gosudarstvennyy institut prikladnoy khimii, Leningrad.

S/076/62/036/011/004/021  
B101/B180

AUTHORS: Sukhotin, A. M., Antonovskaya, E. I., and Pozdeyeva, A. A.  
(Leningrad)

TITLE: The nature of the passivating film on chromium in acid solutions

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 11, 1962, 2368 - 2373

TEXT: The authors seek to explain why chromium is passive in 1 N  $H_2SO_4$  at -0.1 to +1.15 v (referred to hydrogen standard electrode) with passivity decreasing slowly at more negative potentials, while at -0.30 to 0.35 v it is fully activated, and anodic activation sets in at  $> +1.15$  v. The thermodynamic conditions are discussed for all the electrochemical redox processes that can occur on a chromium electrode in acid solution, and their standard potentials are calculated. For the reaction  $2Cr + 3H_2O \rightleftharpoons Cr_2O_3 + 6H^+ + 6e$  the potential is -0.58 v; besides this,  $Cr_2O_3$  has very high resistivity, so it can hardly comprise the passivating film. On the other hand, for  $Cr + H_2O \rightleftharpoons CrO_2 + 4H^+ + 4e$  the potential is -0.15 v, and it is

Card 1/3

S/076/62/036/011/004/021  
B101/B180

The nature of the passivating...

therefore assumed that the film consists mainly of  $\text{CrO}_2$  with other oxides. The potential range  $-0.3 < \varphi < -0.15$  v corresponds to compounds ranging from  $\text{CrO}_{1.8}$  to  $\text{CrO}_2$ . The anodic oxidation of  $\text{Cr}_2\text{O}_3$  and  $\text{CrO}_2$  to soluble compounds of  $\text{Cr}^{\text{VI}}$  occurs at  $\varphi > 1.15$  v, which agrees with the behavior of the chromium electrode. The polarization curve of  $\text{CrO}_2$  in 1 N  $\text{H}_2\text{SO}_4$  was plotted experimentally between  $-0.7$  and  $+1.4$  v. The dioxide was synthesized by thermal decomposition of  $\text{CrO}_2\text{Cl}_2$ . X-ray analysis confirmed the composition  $\text{CrO}_2$  with slight  $\text{Cr}_2\text{O}_3$  impurities. The dissolving rate of  $\text{CrO}_2$  was very low,  $\varphi < 1.2$  v, and the oxide was dissolved as  $\text{Cr}_2\text{O}_7^{2-}$  at  $1.15 - 1.18$  v. The  $\text{CrO}_2$  polarization curve is thus very similar, to that of Cr in the range of  $-0.1 < \varphi < 1.1$  v. On the other hand, hydrogen is separated from the  $\text{CrO}_2$  surface at more negative potentials and without any reduction. Even after long polarization at  $-0.65$  v, the oxide had not changed its x-ray structure. It is therefore assumed that the passivating  $\text{CrO}_2$  film can only exist in dynamic equilibrium and is destroyed as soon as its formation becomes

Card 2/3

of Applied Chemistry) (State Institute of Applied Chemistry)

SUKHOTIN, A.M.; RYZHKOV, Y.M.

Association of ions in solutions. Part 2. Chem. Rev. 1961, 41, 1001-1002.  
(MIRA 19:8, 1961, 1001-1002) Mr. 1001.

1. Condensation and other polymerization.

SUKHOTIN, A. M.; RYZHKOV, Ye. M.

Association of ions in solutions. Part 11: Verification of  
the Reiss theory. Zhur. fiz. khim. 36 no.12:2693-2698 D '62.  
(MIRA 16:1)

1. Leningradskiy institut prikladnoy khimii.

(Ionization)

SUKHOTIN, A.M.

"Electrochemistry of Passivating Films on Metals."

Report presented at the 14th meeting CITCE, Intl. Comm. of Electrochemical<sup>t</sup>  
Thermodynamics and Kinetics, Moscow, 19-25 Aug 63.

Polytechnical Institute, Leningrad.



L 54974-65 ENG(J)/WT(M)/EPI(C)/ENP(L) (EWA(H) (SPR(T)/ENP(L)/ENP(Z)/ENP(B)/EWA(C)  
 17-1, 18-1, 19-1, 20-1, 21-1, 22-1, 23-1, 24-1, 25-1, 26-1, 27-1, 28-1, 29-1, 30-1, 31-1, 32-1, 33-1, 34-1, 35-1, 36-1, 37-1, 38-1, 39-1, 40-1, 41-1, 42-1, 43-1, 44-1, 45-1, 46-1, 47-1, 48-1, 49-1, 50-1, 51-1, 52-1, 53-1, 54-1, 55-1, 56-1, 57-1, 58-1, 59-1, 60-1, 61-1, 62-1, 63-1, 64-1, 65-1, 66-1, 67-1, 68-1, 69-1, 70-1, 71-1, 72-1, 73-1, 74-1, 75-1, 76-1, 77-1, 78-1, 79-1, 80-1, 81-1, 82-1, 83-1, 84-1, 85-1, 86-1, 87-1, 88-1, 89-1, 90-1, 91-1, 92-1, 93-1, 94-1, 95-1, 96-1, 97-1, 98-1, 99-1, 100-1  
 S/0165/65/001/001/0020/0028  
 620.193.01  
 36  
 10

ACCESSION NR: AP5007623

AUTHOR: Pozdeyeva, A. A.; Antonovskaya, E. I.; Sukhotin, A. M.

TITLE: Passivity of molybdenum 21

SOURCE: Zashchita metallov, v. 1, no. 1, 1965, 20-28

TOPIC TAGS: molybdenum passivation, molybdenum oxide, molybdenum oxidation, electrode polarization, oxide film

ABSTRACT: The potentiostatic method was used to study the polarization curves for the oxidation of molybdenum in acid and alkaline media (0.1 N  $H_2SO_4$  and 0.1 N KOH); these curves were compared with the electrochemical behavior of all known Mo oxides. In acid solutions, Mo is passivated by a film of  $\gamma$  phase. Oxidation of the latter begins at the potential of anodic activation of passive Mo,  $E = 0.45$  V. At  $E = 0.75-0.80$  V, a new oxide of high electrical resistance appears on the surface of the  $\gamma$  phase. In 1 N  $H_2SO_4$ , at potentials greater than 0.6 V, all Mo oxides oxidize and hence cannot passivate the metal. Mo does not passivate in alkaline solutions because  $MoO_2$  and  $Mo_2O_3$  ( $\beta$  and  $\gamma$  phase), which would make up the passivating film, oxidize to  $Mo_4$  at -0.96 to 1.0 V, values which are very

Card 1/2

L 54974-65  
ACCESSION NR: AP5007623

... at which these oxides are formed. In 1 N KOH, the  
... potential

... concentration in-  
creases, the ...  
or No rises substantially. We express our sincere thanks to M. D. Kondrashov  
and Yu. A. Omel'chenko for carrying out the X-ray structural measurements at our  
request. Orig. art. has: 4 figures, 1 formula and 4 tables.

ASSOCIATION: Institut prikladnoy khimii (Institute of Applied Chemistry)

SUBMITTED: 15Sep64

ENCL: 00

SUB CODE: M1, GC

NO REF SOV: 007

OTHER: 014

Card 2/2

10(2)

AUTHORS:

Romashov, A. M., Rodionov, V. M.,

SOV/20-123-4-13/53  
Sukhotin, A. P.

TITLE:

Explosion in an Unbounded Medium of Increasing Density (Vzryv v  
uplotnyayushcheyseya neogranichennoy srede)

PERIODICAL:

Doklady Akademii nauk SSSR, 1958, Vol 121, Nr 4, pp 627-630  
(USSR)

ABSTRACT:

The present paper deals with the most important results obtained by the experimental and theoretical investigation of an explosion in a compressing nonelastic medium. First, a short report is given about the experimental method employed. Explosive charges of 1.0; 6.0 and 24.0 g were caused to explode in sandy soil having a density of 1.5 g/cm<sup>3</sup> and a moisture content of 6%. In the course of the experiments, the influence exercised by the free surface upon the development of the explosion was eliminated. The propagation velocity of the wave front and the time-dependent development of the displacement of spherical layers round the explosion center were determined. For this purpose, foils of 0.1 mm thickness were fastened to the ground; as a result of the explosion they were displaced together with the medium. The electric signals were recorded by means of a cathode oscillograph OK-24(IKhF).

Card 1/4

SOV/20-123-4-13/53

# Explosion in an Unbounded Medium of Increasing Density

The following experimental results were obtained: A diagram shows a typical dependence  $r(t)$ , which was determined in connection with an explosion of a 24 g charge, viz. for a layer located at a distance of 10 cm from the center of the charge. Similar curves were plotted also for the other distances. These curves then give the field of displacement round the charge at different instants of time. By differentiation of the curves  $r(t)$  for the time dependence of the displacements the velocity field for the displacement of particles of the medium and also the variation of this velocity field with respect to time are then found. The following expressions hold:

$$D = 40 \sqrt[3]{q/R}; u = 3.4 (\sqrt[3]{q/R})^{1.6}; v = u(R/r)^{1.5}.$$

Here,  $R, r$  [m] denote the coordinates of the front and the current coordinate;  $q$  [kg] - the weight of the charge;  $D$  [m/sec] - the velocity of the wave front;  $u, v$  [m/sec] - the velocities of the displacements of particles of the medium on and behind the front respectively at a distance  $r$  from the center of the charge. From the data thus obtained, the kinetic energy (for various instants of time) are then determined.

Their value varies only little and amounts to  $\sim 2-3\%$  of the

Card 2/4

SOV/20-123-4-13/53

Explosion in an Unbounded Medium of Increasing Density

ASSOCIATION: Institut Khimicheskoy fiziki Akademii nauk SSSR  
(Institute of Chemical Physics of the Academy of Sciences,  
USSR)

PRESENTED: June 28, 1958; by N. N. Semenov, Academician

SUBMITTED: June 28, 1958

Card 4/4

ADUSHKIN, V.V. (Moskva); SUKHOTIN, A.P.

Destruction of a solid medium by blasting. PMTF no.4:94-101 J1-  
Ag '61. (MIRA 14:10)

(Blasting)

Sukhotin, B.N.

CHERISHCHEV, E.V.; SABIRY, M.P.; ABROSIMOV, E.V.; GRIGORYEV, V.P.;  
SUKHOTIN, B.N.; FEDOROV, L.S.

Issledovanie sostava metalla na otdeleyakh  
gorizontalk po vysote vanny 500-tonnoy  
martenovskoy pechi.

report submitted for the 5th Physical Chemical Conference on  
Steel Production.

MOSCOW 30 JUN 1958

PHASE I BOOK EXPLOITATION

SOV/5411

Konferentsiya po fiziko-khimicheskim osnovam proizvodstva stali. 5th,  
Moscow, 1959.

Fiziko-khimicheskiye osnovy proizvodstva stali; trudy konferentsii  
(Physicochemical Bases of Steel Making; Transactions of the  
Fifth Conference on the Physicochemical Bases of Steelmaking)  
Moscow, Metallurgizdat, 1961. 512 p. Errata slip inserted.  
3,700 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni  
A. A. Baykova.

Responsible Ed.: A. M. Samarin, Corresponding Member, Academy  
of Sciences USSR; Ed. of Publishing House: Ya. D. Rozentsveyg.  
Tech. Ed.: V. V. Mikhaylova.

Card 1/16



PHASE I BOOK EXPLOITATION

SOV/5411

Konferentsiya po fiziko-khimicheskim osnovam proizvodstva stali. 5th,  
Moscow, 1959.

Fiziko-khimicheskiye osnovy proizvodstva stali; trudy konferentsii  
(Physicochemical Bases of Steel Making; Transactions of the  
Fifth Conference on the Physicochemical Bases of Steelmaking)  
Moscow, Metallurgizdat, 1961. 512 p. Errata slip inserted.  
3,700 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni  
A. A. Baykova.

Responsible Ed.: A. M. Samarin, Corresponding Member, Academy  
of Sciences USSR; Ed. of Publishing House: Ya. D. Rozentsveyg.  
Tech. Ed.: V. V. Mikhaylova.

Card 1/16

115

SOV/5411

Physicochemical Bases of (Cont.)

PURPOSE: This collection of articles is intended for engineers and technicians of metallurgical and machine-building plants, senior students of schools of higher education, staff members of design bureaus and planning institutes, and scientific research workers.

COVERAGE: The collection contains reports presented at the fifth annual convention devoted to the review of the physicochemical bases of the steelmaking process. These reports deal with problems of the mechanism and kinetics of reactions taking place in the molten metal in steelmaking furnaces. The following are also discussed: problems involved in the production of alloyed steel, the structure of the ingot, the mechanism of solidification, and the converter steelmaking process. The articles contain conclusions drawn from the results of experimental studies, and are accompanied by references of which most are Soviet.

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Physicochemical Bases of (Cont.)

SOV/5411

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*Sukhotin, B.N.*

S/137/51/000/011/016/123  
AC60/A101

AUTHORS: Chelishchev, Ye.B., Sabiyev, M.P., Abrosimov, Ye.V., Grigor'yev, V.P., Fedorov, L.F., Sukhotin, B.N.

TITLE: Metal composition at various levels of the vat of a 500-ton open-hearth furnace, and the decarbonizing of steel

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 11, 1961, 27-28, abstract 11V183 (V sb. "Fiz-khim. osnovy proiz-va stali", Moscow, Metallurg-izdat, 1961, 5 - 11)

TEXT: In order to determine the degree of stirring and homogeneity of metal composition at various points of the vat of a 500-ton open-hearth furnace, in order to determine the possibility of a further increase of the vat dimensions, a series of metal samples was taken from 11 heats. The samples were taken with the aid of a welded box-rod affixed to the pan of a charging machine. Three charging molds were mounted in the box, each containing quartz crucibles with Al wire. The C content varied between the limits of 0.1 and 1.0%; O content - 0.005 to 0.03%. The altitude variation in carbon content is of no practical significance. The altitude-variation of O content is very noticeable. In the ma-

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L 9774-66 EWT(m)/EWP(t)/EWP(b) JD

ACC NR: AP5026298

SUB CODE: UR/0125/65/000/010/0069/0071

AUTHOR: Kamenskiy, Yu. M. (Engineer); Sukhotin, B. N. (Engineer); Yavoytskiy, V. I.  
(Doctor of technical sciences)

ORG: [Kamenskiy, Sukhotin] Moscow Serp i Molot Plant (Moskovskiy zavod "Serp i Molot"); [Yavoytskiy] Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov)

TITLE: Use of single-phase transformers in electroslag melting installations

SOURCE: Avtomaticheskaya svarka, no. 10, 1965, 69-71

TOPIC TAGS: electric transformer, electroslag melting, voltage regulation, slag /  
EWM single phase transformer

ABSTRACT: The recently developed EWM-2000/10 single-phase transformers used for the electroslag refining of metals are superior to the three-phase transformers previously employed for this purpose. They have a larger number of voltage stages which, moreover, can be switched under load. In this connection, the authors present the results of an experimental investigation which shows that during the melting the voltage in the slag bath tends to increase somewhat (8-10 v), which leads to a corresponding increase in power requirement and in the temperature of slag and metal, as well as a

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UDC. 621.791.9:621.314.2

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I 04725-57 EMP(k)/EMP(m)/EMP(v)/ETL WW/JD/JG

ACC NR: AP0027005

(N)

SOURCE CODE: UR/0148/66/000/005/0073/0077

AUTHOR: Afanas'yev, Yu. I.; Kamenskiy, Yu. M.; Sukhotin, B. N.; Yavoytskiy, V. I.

ORG: Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov)

TITLE: Certain problems of the crystallization of ingots of electroslog-remelted metal.  
Report 1.

SOURCE: IVUZ. Chernaya metallurgiya, no. 5, 1966, 73-77

TOPIC TAGS: metal crystallization, electroslog melting, metal melting, molten metal

ABSTRACT: Oriented crystallization is one of the chief advantages of the electroslog re-melting process, but it requires the observance of specified conditions. Thus, the optimal depth of the molten metal bath must be one-half of the diameter (side) of the crystallizer, for ingots weighing up to 1000 kg. The optimal form of the molten metal bath in the case of a cone-shaped crystallizer is assured by maintaining a constant linear rate of ingot build-up, which can be done by gradually reducing the electrode feed rate, on the basis of the equation:  $v_b = v_{r.b.} = v_e \frac{S_e}{S_{cr} - S_e}$  where  $v_b$  is the linear ingot build-up rate;  $v_{r.b.}$  is the rate of rise in the level of the slag bath (for a constant height of slag bath  $v_b = v_{r.b.}$ );  $v_e$  is the linear

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UDC: 669.087.532.78

L 04736-67

ACC NR: AP6027005

investigation of the pattern of variation in the intensity of heat transfer from the slag bath and ingot to the crystallizer walls, performed with the aid of a technical thermometer, shows that the bath depth may be optimized by assuring the completion of the process of crystallization at a given level prior to any marked recession -- due to horizontal and vertical shrinkage -- of the ingot and the slag crust from the crystallizer walls and thus preserving contact with, and hence also the cooling effect of, the crystallizer walls and preventing distortions of ingot shape. Orig. art. has: 5 figures.

SUB CODE: 13, 11/ SUBM DATE: 19Oct65/ ORIG REF: 003

Card 3/3 *gd*



ACC NR: AP5024097 SOURCE CODE: UR/0368/65/002/008/0402/0406

AUTHOR: Koval', A. A.; Kopanets, Ye. G.; Korda, Yu. S.; Sukhotin, L. N. (Voronezh State University); Tsytko, S. P.

ORG: none

TITLE: Excitation function of the reaction  $S^{36}(p)Cl^{37}$  in the interval  $E_p = 1.4--2.1$  Mev

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 2, no. 8, 1965, 402-406

TOPIC TAGS: sulfur, chlorine, excitation spectrum

ABSTRACT: To obtain new experimental data on the excited states of  $Cl^{37}$ , which are quite scanty, the authors attempted to use the hitherto unobserved radiative proton capture reaction  $S^{36}(p)Cl^{37}$ , in which the energy release is  $Q_m = 8.401 \pm 0.009$  Mev. A thin isotopic  $S^{36}$  target sufficiently enriched to make radiative capture of a proton by  $S^{36}$  observable, was prepared in an electromagnetic separator by knocking  $S^{36}$  ions into a tantalum base. The method of preparing such targets was described by M. I. Guseva (PTE, No. 5, 112, 1952). The target was approximately 3 kev thick at a proton energy on the order of 2 Mev. The proton source was the 4-Mev electrostatic accelerator of the Physicotechnical Institute of the Ukrainian Academy of Sciences. The proton current to the target amounted to 8--10  $\mu$ a during the course of the experiment, and was monitored with a current integrator. The monitor was a 70 x 50 mm NaI(Tl)

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L 11030-00

ACC NR: AP5028025

crystal. The excitation function of the reaction  $S^{36}(p\gamma)Cl^{37}$  was measured in the incoming-proton energy interval 1.4--2.1 Mev at  $90^\circ$  to the proton beam. It is deduced from the measurements that the resonances observed correspond to the  $Cl^{37}$  resonance levels produced in the reaction  $S^{36}(p\gamma)Cl^{37}$ . The positions of the resonances and the corresponding excitation energies of the  $Cl^{37}$  nucleus are tabulated. Authors thank M. I. Guseva for preparing the isotopic  $S^{36}$  target, Yu. A. Kharchenko for operation of the accelerator, and I. P. Kolodyzhnyy and I. M. Besspalov for help with the measurements. Orig. art. has: 1 figure and 1 table.

SUB CODE: 20/ SUBM DATE: 07Sep65/ ORIG REF: 003/ OTH REF: 005

07/

Card 2/2

SUKHOTIN, M.; VLADIMIROV, P.

What will be the response of amateur photographers? Sov.foto 19  
no.11:65 N '59. (MIRA 13:4)  
(Photography--Printing papers)

Sukhotin, M.  
DRUYAN, Ya., kandidat ekonomicheskikh nauk; SUKHOTIN, M.; VASIL'YEVA, V.

Organizing freight haulage along the most effective routes. Avt.  
transp. 35 no.8:8-9 Ag '57. (MLBA 10:9)

1. Leningradskiy filial Nauchno-issledovatel'skogo instituta  
avtomobil'nogo transporta i Leningradskiy trest tsentralizovan-  
nykh perevozok.

(Transportation, Automotive)

DRUYAN, Ya.M.; BERGMAN, Ya.I.; SUKHOTIN, M.D.; SHUSTOV, A.S., otv. za  
vypusk; GALAKTIONOVA, Ye.N., tekhn.red.

[Organization of the centralized direction of automotive  
freight transportation in Leningrad] Opyt organizatsii  
tsentralizovannogo rukovodstva gruzovymi avtomobil'nyimi  
perevozkami v Leningrade. Moskva, Nauchno-tekhn.izd-vo  
avtotransp.lit-ry, 1958. 44 p. (MIRA 12:6)  
(Leningrad--Transportation, Automotive)

SUKHOTIN, S.G. (Moskva); UVAROV, V.G. (Moskva) SHAPOVALOVA, N.K. (Moskva)

Contactless pulse-frequency telemetering device using transistors.  
Avtom. 1 telem. 23 no.3:413-416 Mr '62. (MIRA 15:3)  
(Telemetering--Equipment and supplies)

KLYUKIN, Igor' Ivanovich; MYASNIKOV, L.L., doktor tekhn. nauk, prof.,  
retsensent; SUKHOTIN, V.E., kand. tekhn. nauk, retsensent;  
GORDON, L.A., nauchn. red.; VASIL'YEVA, N.N., red.;  
SHISHKOVA, L.M., tekhn. red.

[Underwater sounds] Podvodnyi zvuk. Leningrad, Sudpromgiz,  
1963. 141 p. (MIRA 16:8)  
(Underwater acoustics)

USSR/Miscellaneous - Books

Card 1/1      Pub. 124 - 31/32

Authors      : Sukhotin, V. P., Dr. of Philol. Sc.

Title        : Fundamental work on the grammar of the Russian language

Periodical   : Vest. AN SSSR 25/6. 118-124, June 1955

Abstract    : Critique is presented on a new book compiled by a group of authors and entitled, "Grammar of the Russian language," published by the Academy of Sciences, USSR in 1954. Two USSR references (1950-1953).

Institution : .....

Submitted   : .....



L 04903-67 EWT(1) GD

ACC NR: AT6028703

SOURCE CODE: UR/0000/66/000/000/0003/0006

AUTHOR: Nebolyubov, Yu. Ye.; Filippov, N. A.; Sukhotin, V. S.; Veys, L. D.

ORG: none

TITLE: <sup>25</sup>Programmed time relay using contactless elements 26  
B+1SOURCE: AN KirgSSR. Institut avtomatiki. Uzly i ustroystva diskretenogo deystviya (Digital elements and devices). Frunze, Izd-vo Ilim, 1966, 3-6

TOPIC TAGS: time relay, circuit design, time switch

ABSTRACT: The authors describe a programmed time relay with an output giving 20 different time periods, each from 5 to 100 sec long, and set by the operator by means of a switch. The device uses magnetic elements with square-wave hysteresis loops, a binary scaling circuit permitting reduction of the number of elements in the whole circuit, and series scalars of the shift register type. The programmed time relay consists of a master pulse generator, binary scaler (9 locations), two-clock pulse conversion rule, 20 coding rings, two-clock pulse coder register, 20 switches, output relay, and buttons and switches for controlling and starting the time relay. Multivibrator stability determines time period stability. The 20 switches insert a predetermined program for emitting time periods. The length of the n-th period is set by

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L 04903-67

ACC NR: AT6028703

the corresponding n-th switch. Orig. art. has: 1 formula and 1 figure.

SUB CODE: 09/ SUBM DATE: 22Feb66/ ORIG REF: 001

*ms*  
Card 2/2

MIKHASIK, I., podpolkovnik; NERETIN, Ye., podpolkovnik;  
SUKHOTIN, Ye., podpolkovnik

Recording of military and political training. Voenn. vest.  
41 no.5:69-73 My '61. (MIRA 14:8)  
(Russia--Army--Personnel records)

SUKHOTIN, Yu.

Useful manual ("Standard methods for determining the economic efficiency of capital investment and new equipment in the national economy of the U.S.S.R.") Mashinostroitel' no.11:80 N '60.

(MIRA13:10)

(Capital investment)

(Industrial equipment--Technological innovations)

SUKHOTIN, Yu.

Foreign economists on Soviet studies on the efficiency of  
capital investments. Vop.ekon. no.9:120-127 S '61.  
(MIRA 14:8)

(Capital investments)

YANKOVA, H.Ye., kadm. fiz.-mat. nauk; CHERNYKH, S.I., inzh.; CHERNYKH, V.V., inzh.

Residual content of sulfate ions in oxide insulation coatings.  
Elektrichestvo no.8:92-93 Ag '65. (MIRA 18:9)

1. Voronezhskiy gosudarstvennyy universitet.

SUKHOTINA, G.Y.; SHAKHPARONOV, M.I.

Hypersonic properties of solutions benzene-toluene, benzene-p-xylene, and pyridine-p-xylene. Zhur. fiz. khim. 39 no.9:2237-2244 S '65. (MIRA 18:10)

L. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.

SUKHOTINA, G.G. (Leningrad); SUKHOTIN, A.M. (Leningrad)

Ionic association in solutions. Part 7: Characteristics of ionic motion in solutions of associated electrolytes. Zhur. fiz. khim. 35 no.1:41-47 Ja '61. (MIRA 14:2)

1. Gosudarstvennyy institut prikladnoy khimii.  
(Ions—Migration and velocity) (Electrolytes)



(A)

L 1333-66 EWP(e)/EPA(s)-2/EWT(m)/EPF(c)/EWP(i)/EPA(w)-2/T/EWP(t)/EWP(b)  
 ACCESSION NR: AP5020393 DIAAP/IJP(c) JD/WB/WH UR/0105/65/000/008/0092/0093  
 621.315.61.C48.1

AUTHOR: Markova, N. Ye. (Candidate of physico-mathematical sciences) Sukhotina, E. N. (Engineer) Chernyshev, V. V. (Engineer)  
 44.55 44.55 80

TITLE: Residual content of sulfate ions in oxide insulation coatings 15 77  
 3

SOURCE: Elektrichestvo, no. 8, 1965, 92-93

TOPIC TAGS: anodic oxidation, aluminum, radioisotope, electric insulation  
 15 44.55, 27

ABSTRACT: The residual content of sulfate ions in oxide insulation coatings is studied by oxidizing 99.99% pure aluminum in sulfuric acid containing radioactive  $S^{35}$ . The specimens were smooth foil squares  $1 \times 1$  cm anodized at a current density of  $15 \text{ ma/cm}^2$ . The acid concentration was 8-10% and the temperature of the electrolyte during oxidation was  $25-27^\circ\text{C}$ . After anodizing, the samples were cleaned and dried, and their radioactivity was measured by an end window counter. Graphs are given showing the relationship between radioactivity and oxidation time for various washing methods. Conventional cleaning (running tap water followed by distilled water) gives a linear increase in radioactivity with anodizing time. Electrochemical cleaning considerably reduces the sulfate-ion concentration after oxidation.

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L 1333-66

ACCESSION NR: AP5020393

This cleaning method is recommended for improving the reliability and quality of anodized coatings. Orig. art. has: 2 figures.

ASSOCIATION: Voronezhskiy Gosudarstvennyy universitet (Voronezh State University)

SUBMITTED: 09Oct64

ENCL: 00

SUB CODE: GC, MM

NO REF SOV: 006

OTHER: 002

Card 2/2

SHAKHPARONOV, M.I.; TUNIN, M.S.; LANSINA, L.V.; SUKHOTINA, G.G.

Hyperacoustic properties of liquids and molecular structure.

Ukr.fiz.zhur. 7 no.7:792-796 J1 '62.

(MIRA 15:12)

1. Moskovskiy universitet.

(Sound—Speed)

(Molecules)

A. HOLOD, A. I.; NOBILATOV, A.; JELINEK, M. I.

Velocity and absorption of ultrasound in pyridine-paraxylene  
mixtures. Vest. Mosk. un. Ser. 2: Fizn. 1977-78, 2a-2  
1978. (NIPA 18:3)

1. P. S. Smirnov, S. I. Shchegolev, S. I. Shchegolev, S. I. Shchegolev  
and I. I. Shchegolev, Institute of Chemical Physics, Academy of Sciences of the USSR.

L 1148-66 EWT(1)/EPF(n)-2/EED(b)-3/ETC(m) IJP(c) WW

ACCESSION NR: AP5023689

UR/0076/65/039/009/2237/2244

541.8+547

44.55  
AUTHOR: Sukhotina, G. G.; Shakhparonov, M. I. 44.55

21.44.55 11.44.55 7  
TITLE: Study of the hyperacoustic properties of benzene-toluene, benzene-p-xylene, and pyridine-p-xylene solutions 53 30

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 9, 1965, 2237-2244

TOPIC TAGS: vibration relaxation, Rayleigh scattering, benzene, toluene, xylene, pyridine, acoustic absorption

ABSTRACT: The aim of the work was to obtain experimental data on the hyperacoustic properties of ideal solutions and solutions with positive deviations from ideality in the presence of a pronounced dependence of vibration relaxation time on the concentration of the components, and to compare these data with the predictions of the theory of vibration relaxation, taking into account existing information on the structure and properties of these systems. The fine structure of the Rayleigh line of light scattering was studied in the solutions benzene-toluene at 17°C, benzene-p-xylene at 18°C, and pyridine-p-xylene at 22°C. The velocities of the hypersound

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L 1148-66

ACCESSION NR: AP5023689

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were determined, and the acoustic relaxation times were calculated with the assumption that the relaxation is related to the thermal excitation and to the deactivation of intramolecular vibrations. In the case of benzene-toluene solutions, where deviations from Raoult's law are very slight, the acoustic properties within the range of experimental error qualitatively follow the equations of the simplified theory of vibration relaxation. In the case of solutions of benzene and pyridine in p-xylene (positive deviations of the thermodynamic properties from ideality), some discrepancies are observed between the sound absorption data given by the experiment and the theoretical estimates of the sound absorption coefficient. It is postulated that these discrepancies are due to concentration fluctuations and to the relaxation of these fluctuations. Orig. art. has: 3 figures, 4 tables, and 13 formulas.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 28 Jun 64 44/56

ENCL: 00

SUB CODE: GP, GC

NO REF SOV: 011

OTHER: 004

Card 2/2

L 31184-66 EWP(j)/EWP(k)/EWT(l)/EWI(m)/T IJP(c) RM/WG/WW/JN

ACC NR: AP6022544

SOURCE CODE: UR/0189/66/000/001/0009/0012

AUTHOR: Sukhotina, G. G.; Shakhparonov, M. I.

ORG: Department of Physical Chemistry, Moscow State University (Kafedra fizicheskoy khimii Moskovskogo gosudarstvennogo universiteta)

TITLE: Acoustic relaxation and rate of propagation of hypersonic waves in liquids

SOURCE: Moscow. Universitet. Vestnik. Seriya II. Khimiya, no. 1, 1966, 9-12

TOPIC TAGS: vibration relaxation, vibration propagation, propagation velocity, intramolecular mechanics, vibration frequency, acoustics

ABSTRACT: The study aims at calculating parameters of acoustic relaxation of several liquids at 20° based on experimental and literature data. The objects of the investigation were selected so that it was possible to trace the relationship between time of relaxation and lowest frequency of lowest intramolecular oscillations  $\nu$ . Measurements of the velocity of hypersound in V. decane, cyclohexane, decaline, ortho- and paraxylols, styrene, nitromethane, acetone, tri- and tetrachloroethylene were made by the authors on an experimental device described in an earlier report.

A. Normatov and O. Shakirov took part in the measurements of propagation rate and ultrasonic absorption in liquids. (Orig. art. has 1 figure and 2 tables. [JPRS])

SUB CODE: 20, 07/ SUBM DATE: 25May65/ ORIG REF: 003

Card 1/1 CC UDC: 665.521.5: 678.744.325

LEVIN, S.L., professor; SUKHOTINA, K.I.

Treatment of Parkinson's disease induced by manganese. Gig. i san.  
21 no.6:29-33 Je '56. (MLBA 9:8)

1. Iz Magnitogorskogo nauchno-issledovatel'skogo instituta gigiyeny  
truda i professional'nykh zabolevaniy  
(PARALYSIS AGITANS, etiology and pathogenesis,  
manganese pois., ther. (Rus))  
(MANGANESE, poisoning,  
causing paralysis agitans (Rus))  
(POISONING,  
manganese, causing paralysis agitans (Rus))



S/138/59/000/07/03/009

AUTHORS: Kaluzhenina, K. F., Zherebkov, S. K., Sukhotina, T. M.,  
Sergeyicheva, V. S.

TITLE: On the Properties of Mixtures and Vulcanizates Based on Bromobutyl  
Rubber

PERIODICAL: Kauchuk i Rezina, 1959, No. 7, pp. 13-18

TEXT: The authors outline the valuable properties of butyl rubber and explain its application in the production of rubber articles. The chemical and physical properties of vulcanizates made of butyl rubber are due to their low non-saturation and also to the presence of regularly distributed side methyl groups, linked with the densely packed linear chains, as described in Ref. 1, by R. Thomas and L. King. The properties of the vulcanizates made of the butyl rubber are described, and how these properties are applied in the production of various rubberized articles. However, the disadvantage of the butyl rubber mixtures is the slow vulcanization and the incompatibility of the butyl rubber with other non-saturated polymers, as well as its poor adhesion to various metals. Some of these disadvantages could be eliminated by the use of bromobutyl rubber. According to the authors, there are two methods for the production of bromobutyl

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S/138/59/000/07/03/009

## On the Properties of Mixtures and Vulcanizates Based on Bromobutyl Rubber

rubber: 1) by brominating the butyl rubber on the rollers with bromine, 2) by brominating the butyl rubber with ethyl bromine in a solution of ethyl chlorine. A comparison is made of the properties of domestic bromobutyl rubber produced by the two methods with those of the imported bromobutyl rubber produced by the 2202 trade mark, and the possibility of combining the bromobutyl rubber with other polymers is shown. When combining the domestic bromobutyl rubber with natural rubber, rubber is obtained with satisfactory properties. The compatibility of the bromobutyl rubber with other polymers makes it possible to cement rubber onto metal. The experimental procedure undertaken is outlined in detail and the technological and physico-mechanical properties of the vulcanizates are determined and given in Table 1. The highest stability of the adhesion is reached between the ply of natural rubber or butyl rubber and a ply of a mixture of imported bromobutyl rubber, combined with natural rubber; a somewhat lower stability is reached with a ply of a mixture based on the domestic bromobutyl rubber, combined with the natural rubber. Adhesion to metal of the rubber can be accomplished by using the ply of a mixture based on the bromobutyl rubber. The possibility of fixing the bromobutyl mixtures to metal by the hot method was studied. The results of the tests are given in Table 7. The results of the

Card 2/3

NOVIKOV, A.S.; GALIL-OGLY, F.A.; FRADKINA, F.Ye.; SUKHOTINA, T.M.; FOMINA, L.G.

Technological properties of rubber compounds based on the ethylene-propylene synthetic rubber and technical characteristics of their vulcanizates. Kauch.i rez. 21 no.7:1-5 J1 '62. (MIRA 15:7)

1. Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti.  
(Rubber, Synthetic)

SUKHOTINA, Z.S. (Moskva)

Books on mathematics published in 1961. Mat. v shkole no.1:82-85  
Ja-F '63. (MIRA 16:6)

(Bibliography--Mathematics)